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FOREST PEST MANAGEMENT
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A BIOLOGICAL EVALUATION OF THE BAKER FLAT TIMBER SALE, GASQUET RANGER DISTRICT, SIX RIVERS NATIONAL FOREST

John Kliejunas, Plant Pathologist

ABSTRACT

Portions of the Baker Flat Timber Sale on the Gasquet District were evaluated in order to provide Forest Pest Management information on how the sale may effect the spread of Port-Orford-cedar root rot. Management alternatives provided for consideration include 1) no entry, 2) salvage Port-Orford-cedar as they die, and 3) remove all Port-Orford-cedar now.

On November 2, 1983, John Kliejunas of the Forest Pest Management Staff and Dave Adams, forest pathologist, California Department of Forestry, examined portions of a timber sale near Baker Flat on the Gasquet Ranger District. They were accompanied by District Silviculturist Tom Simonson, Timber Management Administrator Dwayne Siex, and Small Sales Officer Ken Wells. The District was aware that Port-Orford-cedar root rot, caused by Phytophthora lateralis, was currently killing Port-Orford-cedar within and adjacent to the sale boundaries, and requested further input into the effects of the sale on spread of the disease. Specifically, the question was, should healthy Port-Orford-cedar within the sale boundary be cut now, or left and salvaged as they die? Following on-site discussion, it was agreed that a written report describing implications of various actions on District attempts to control the spread of the disease would be written to provide forest pest management input to the environmental assessment process for the sale.

USDA, FOREST SERVICE, PACIFIC SOUTHWEST REGION
State and Private Forestry, Forest Pest Management
630 Sansome Street, San Francisco, California 94111

OBSERVATIONS

The Baker Flat Sale is located within stands of overmature (250 years +) and defective Douglas-fir, with sugar pine and Port-Orford-cedar intermixed throughout. Except for approximately 100 acres adjacent to Shelly Creek, the prescription is for a regeneration cut. Because of streamside zone restrictions in the area adjacent to the creek, the prescription there is for sanitation/salvage treatment with skyline logging on all except flat ground. Approximately 10% (32,000 board feet) of the Port-Orford-cedar within the sale are marked for removal. The sale was cruised and marked in 1979 when only a few Port-Orford-cedar were showing initial symptoms of infection by P. lateralis. The disease has intensified and spread locally since then, and numerous dead and dying, but unmarked, Port-Orford-cedar are now present.

MANAGEMENT ALTERNATIVES

Three alternatives available to the District to limit the spread of P. lateralis from the sale area are discussed below. As in any environmental assessment process, the disease considerations discussed need to be examined in light of other biological, environmental, and economic factors that the resource manager must consider when deciding which alternative is best suited to meet management objectives.

1. No entry: Prohibiting entry into the infested area for salvage would present the least risk of spreading P. lateralis to other, currently uninfested, stands containing Port-Orford-cedar. Because the fungus is soil borne, its only means of dispersal to other drainages is by vectors (man, vehicles, logging equipment, etc.) which can move the infested soil. If logging activities were prohibited within the infested area, equipment would not become contaminated. However, no entry would not prevent continuing mortality of Port-Orford-cedar on the site. As long as the host remains on the site, the disease will perpetuate itself and mortality will continue. The reduced risk of carrying infested soil to other sites, and the probability of initiating new disease centers, would have to be weighed against the economic value lost by failure to utilize merchantable dead or dying Port-Orford-cedar. High quality logs of the species are currently worth over one thousand dollars/thousand board feet. Furthermore, some risk of spreading the disease from the sale area to uninfested areas would remain even without entry for salvage. The area where the disease is most active borders Shelly Creek with infected Port-Orford-cedar upstream and is adjacent to a main Forest road which is readily accessible to other Forest users. Therefore, water, as well as activities other than logging, can carry the pathogen to other sites.

2. Salvage Port-Orford-cedar as they die: Port-Orford-cedar in the area will continue to die as the disease spreads and intensifies locally. Because of the high price for the species, salvage of individual trees would probably be cost-effective. However, continued entry into the stand would conflict with the goal of reducing disease spread and impact. Periodic salvage would move infested soil to other parts of the stand during each logging operation, and would increase the risk of

long distance spread. The risk of spreading the disease long distances and initiating new centers of infection as a result of salvage operations can be reduced by modifications in management practices. Conducting activities in warm, dry summer months when the fungus is least active would decrease the amount of soil sticking to equipment and reduce the probability of the fungus surviving. Steam cleaning of all equipment before it leaves the infested site would also restrict spread by killing any fungus spores in the adhering soil. Because the fungus can survive in infested soil in the form of resistant, thick-walled chlamydospores during conditions unfavorable for growth, steam cleaning should be done at all times of the year. The use of helicopter or skyline logging rather than tractors would limit soil disturbance and would reduce the risk of vectors carrying the infested soil.

3. Remove all Port-Orford-cedar now: One entry to cut healthy as well as dead and dying Port-Orford-cedar, rather than numerous entries over an extended time period, would reduce the probability of spreading the disease to other areas and would reduce the cost of control efforts. Equipment would only have to be steam cleaned once, and the salvage operation could be more easily restricted to the driest time of the year. There would still be site disturbance, but the merchantable Port-Orford-cedar would be harvested. Eliminating all Port-Orford-cedar, including regeneration, would offer the opportunity to eliminate the fungus from the site. The fungus can not survive in the soil for long periods of time without the living host being present. How long a site remains infested without the host being present is not known and probably varies with edaphic conditions. Suggestions have ranged from a year to several years. Removal of all Port-Orford-cedar, and follow-up eradication of regeneration for a minimum period of 3 to 5 years, may enable the site to be utilized by Port-Orford-cedar in the future. However, this procedure would be costly, and the efficacy of attempting to recapture an infested site for future production of commercial Port-Orford-cedar by excluding the host for a period of years to eliminate the pathogen is not known. Furthermore, removal of healthy Port-Orford-cedar may eliminate any possible source of genetic resistance to the pathogen. Even if the pathogen was initially eliminated, the particular site is especially susceptible to re-contamination because of its proximity to Shelly Creek with infected Port-Orford-cedar upstream, relatively flat areas with stagnant or slow moving water, and its proximity to a road. Therefore, the real benefit of eliminating the disease from the site would to be eliminate it as a source of inoculum which could be transported to other, more protectable, sites.

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